ehp Environmental Health PERSPECTIVES
ehponline.org
Published by the National Institute of Environmental Health Sciences

Blood Mercury Reporting in NHANES: Identifying Asian, Pacific Islander, Native American, and multiracial groups

Jane M. Hightower, Ann O'Hare, and German T. Hernandez

doi:10.1289/ehp.8464 (available at http://dx.doi.org/)
Online 21 September 2005

The National Institute of Environmental Health Sciences
National Institutes of Health
U.S. Department of Health and Human Services

Blood Mercury Reporting in NHANES: Identifying Asian, Pacific Islander, Native American, and multiracial groups

Jane M. Hightower MD[1], Ann O'Hare MD[2], German T. Hernandez MD[3]

From the Department of Internal Medicine, California Pacific Medical Center, San Francisco, California[1], the Department of Medicine, Veteran's Administration and University of California San Francisco, San Francisco, California[2], and the Department of Medicine, University of California San Francisco and San Francisco General Hospital, San Francisco, California[3]

Address correspondence to Jane M. Hightower, MD. 2100 Webster Street Suite 418. San Francisco, CA 94115. (415) 923-3025. Fax (415) 749-5722. **jhightowermd@aol.com**.

Article descriptor: Risk Characterization

Running title: Blood Mercury Reporting in NHANES

Key Words: Alaskan Natives, American Medical Association, Asians, Centers for Disease Control, Fish, Mercury, Methylmercury, Multiracial, National Health and Nutrition Examination Survey, Native Americans, Pacific islanders, Reference Dose, Women

Abbreviations:

AMA=American Medical Association

CDC=Centers for Disease Control

CI=Confidence Interval

NHANES=National Health and Nutrition Examination Survey

RfD=Reference Dose

SE=Standard Error

USA=United States of America

Acknowledgements:

Dr. Hernandez is supported by the W.K. Kellogg Scholars in Health Disparities Program. Dr. O'Hare is supported by, a Research Career Development Award from the Health Services Research and Development Service, Department of Veterans Affairs. The authors have no known competing financial interests. No grant or funding was obtained for this manuscript.

Outline of section Headings:

Abstract

Introduction

Methods

Results

Discussion

Conclusion

References

Tables

Abstract

Introduction: Asians, Pacific Islanders and Native Americans are a potentially high-risk group for dietary exposure to methylmercury through fish consumption. However, blood mercury levels in this group have not been identified in recent reports of the National Health and Nutrition Examination Survey (NHANES) for the years 1999-2002.

Methods: We used NHANES data from 1999-2002, to obtain population estimates of blood mercury levels among women of childbearing age classified as belonging to the "other" racial/ethnic group (Asian, Pacific Islander, Native American and multiracial without specifying a main race; n=140). Blood mercury levels in this group were compared to those among all other women participants, classified as Mexican American, non-Hispanic black, non-Hispanic white, and "other" Hispanic.

Results: An estimated 16.59 ± 0.40 percent [Standard Error (SE)] of adult female participants who self-identified as Asian, Pacific Islander, Native American, or multiracial (n=140), had a blood mercury level ≥ 5.8 mcg/L, and 27.26 ± 4.22 (SE) percent had a level ≥ 3.5 mcg/L. Among remaining survey participants (n=3497), 5.08 ± 0.90 (SE) percent had a blood mercury ≥ 5.8 mcg/L and 10.86 ± 1.45 (SE) percent had a level ≥ 3.5 mcg/L.

Conclusions: Study subjects in NHANES who self-identified as Asian, Pacific Islander, Native American or multiracial, had a higher prevalence of elevated blood

mercury than all other racial/ethnic participants in the survey. Future studies should address reasons for the high mercury levels in this group and explore possible interventions for lowering risk of methylmercury exposure in this population.

Introduction:

There is growing public awareness of risk of methylmercury exposure associated with fish consumption (Hightower and Moore 2003; Knobeloch et al. 2005). Although Omega-3 fatty acids in fish have been associated with healthful benefits, there is increasing evidence that the methylmercury content in some fish, if consumed too frequently, can lead to adverse health effects. The predominant concerns at this time include cardiovascular disease (Frustaci et al. 1999; Guallar et al. 2002; Rissanen et al. 2000; Salonen et al. 1995; Salonen et al. 2000; Sørensen et al. 1999; Virtanen et al. 2005), autoimmune disease (Bagenstose et al. 1999; Bernier et al. 1995; Bigazzi 1994; Nielsen and Hultman 2002; Silva et al. 2004; Stejskal et al. 1999; Stejskal and Stejskal 1999; Via et al. 2003), infertility (Choy et al. 2002; Dickman and Leung 1998; Leung et al. 2001; Sheiner et al. 2003), neuropsychiatric effects (Beuter and Edwards 2004; Yokoo et al. 2003), and subjective complaints (Fukuda et al. 1999). Furthermore, many of these adverse health effects may occur at mercury levels previously thought to be safe.

The fetus has been the greatest concern, as permanent damage to the developing brain can occur with methylmercury exposure. The EPA's reference dose for mercury was based on a cord blood concentration of 5.8 mcg/L, and corresponds to a maternal intake of 0.1 mcg Hg/Kg body weight/day. However, it has been argued that this concentration should be lowered to 3.5 mcg/L, based on more recent observations showing that cord blood mercury concentrations are approximately 70%

higher than maternal concentrations (Stern and Smith 2003). It is of importance to note that mercury concentration across the placenta was not considered when the reference dose was established (Mahaffey 2005; Rice et al. 2003; Rice 2004).

Fish consumption accounts for the majority of the daily intake of mercury compounds in the United States, with lesser contributions from elemental mercury from mercury vapor in dental amalgams. Urine mercury is a reflection of inorganic or elemental exposure, as occurs with dental amalgams, magical uses of elemental mercury, and herbs and medicines adulterated with inorganic mercury. Only small amounts of Methylmercury, which is primarily consumed through fish consumption, is metabolized to inorganic mercury and excreted in the urine (Dye et al. 2005).

There is also growing recognition within the medical community of the clinical importance of methylmercury exposure and of the connection between blood mercury levels and consumption of fish and shellfish products that are high in mercury. The American Medical Association (AMA) has advocated that physicians “assist in educating patients about the relative mercury content of fish and shellfish products and make patients aware of the advice contained in both national and regional consumer fish consumption advisories” (AMA 2004).

Since 1999, the National Health and Nutrition Examination Survey (NHANES) has reported total whole blood mercury levels in children one to five years of age and in women 16-49 years of age. Recent reports based on NHANES data for 1999-2002

have examined blood mercury levels among the major racial/ethnic groups, but have not examined blood mercury levels among those classified as “other” racial/ethnic group. The “other” group is of interest because it includes people at potentially high-risk for methylmercury exposure through fish consumption, such as Asians, Pacific Islanders, and Native Americans (including Alaskan Natives), (CDC 2005, 2004; National Center for Health Statistics 2005; Sechena et al. 2003).

Methods:

This study complies with all applicable requirements of the U.S.A. human subject and research regulations. This project was reviewed by the Institutional Review Board of the California Pacific Medical Center, and was declared exempt. Data was obtained from public access databases and contained no identifiers.

Data sources: NHANES is a complex, stratified, multistage probability cluster survey of a representative sample of the non-institutionalized civilian population (CDC 2005; National Center for Health Statistics 2005).

We used the most recent NHANES (1999-2002) to compare blood mercury levels among women aged 16-49 in the “other” racial/ethnic group (this includes all participants who self-identified as Asian, Pacific Islander, Native American, multiracial without specifying a main race, or self-identified as a race/ethnicity other than Black,

non-Hispanic white, Mexican American or Hispanic) with those in all other racial/ethnic groups (CDC 2005; National Center for Health Statistics 2005).

Study sample: All women aged 16-49 who were selected for both the interview and examination portions of NHANES and underwent whole blood mercury testing were eligible for inclusion (n=3873). Among these, 236 participants had missing blood mercury results and were thus excluded from the analytic sample (n=3,637). Among the women included in the analysis, 1,377 self-identified as non-Hispanic white, 1,106, as Mexican American, 794 as non-Hispanic black, 220 as other Hispanic, and 140 were categorized as “other.”

Statistical Analysis: Population prevalence estimates for blood mercury levels ≥ 5.8 mcg/L and ≥3.5 mcg/L respectively were obtained using appropriate sample weights (Stata corporation, College Station, TX, USA), (CDC 2005; National Center for Health Statistics 2005). We compared the estimated prevalence of elevated blood mercury levels among participants in the “other” racial/ethnic group to those among Mexican Americans, non-Hispanic whites, and non-Hispanic blacks.

To determine whether observed differences in whole blood mercury levels were most likely to reflect differences in dietary fish consumption rather than exposure to elemental or inorganic mercury, we examined self-reported fish consumption (number of fish and shellfish meals in the last 30 days) among female NHANES participants aged 16-49 (n=3481) by racial/ethnic group. We also examined mean

urine mercury to creatinine ratios (mcg/g) across racial/ethnic groups (n=3551). These analyses were also conducted using sample weights.

Results:

An estimated 16.59 ± 0.40 percent (SE) (95% (CI) 8.41 to 24.77) of adult female participants who self-identified as Asian, Pacific Islander, Native American, or multiracial (n=140), had a blood mercury level ≥ 5.8 mcg/L and an estimated 27.26 ± 4.22 percent (SE) (95% CI 18.63-35.90) had a level ≥3.5 mcg/L. In accordance with the NHANES analytical guidelines, these prevalence estimates are statistically reliable, as the relative standard errors did not exceed 30% of the point estimates. The prevalence of elevated blood mercury level in the “other” group is significantly higher than in all other racial/ethnic groups (Table 1).

Among the remaining participants (n=3497), an estimated 5.08 ± 0.90 percent (SE) (95% CI 3.25-6.92) had a blood level ≥5.8 mcg/L, and an estimated 10.86 ± 1.45 percent (SE) (95% CI 7.90-13.83) had a mercury level ≥3.5 mcg/L.

The mean number of fish and shellfish meals for the “other” racial/ethnic group was higher than for the remaining groups, although the 95% confidence intervals overlapped with all except Mexican Americans. Mexican American fish and shellfish consumption is lower than the “other” population. There were no statistically significant differences between groups in urine mercury/creatinine ratios (Table 2).

Discussion:

4.1 million people in the USA identified themselves as Alaskan Native or Native American alone or in combination with one or more races in Census 2000. 12.5 million people identified as Asian or Pacific Islander, with 51% residing in the West, 19% in the South, 12% in the Midwest, and 19% in the Northeast. Asians, Pacific Islanders, Alaskan Natives and Native Americans accounted for approximately 6.0 percent of live births in 2001, or approximately 242,151 babies born (US Census Bureau 2002, 2002; Ventura et al. 2003)

The prevalence of elevated blood mercury, whether this was defined as ≥ 5.8 mcg/L or ≥ 3.5 mcg/L, was significantly higher among members of the "other" racial/ethnic group than among any other racial/ethnic group, and primarily reflected differences in organic mercury exposure, most likely due to fish consumption.

While reports based on the most recent NHANES data from 2001-2002 have not reported mercury levels for this group (CDC 2004), NHANES data for the years 1999-2000 showed a non-statistically significant trend toward higher mercury levels in the "other" ethnic group (Mahaffey et al. 2004). Estimates presented here based on four years of NHANES data 1999-2002, demonstrate that levels of mercury in this group are statistically significantly higher than for all other groups considered.

Our findings are consistent with smaller studies that showed a correlation of methylmercury through fish consumption within the racial/ethnic groups that comprise the “other” population of NHANES. The groups identified in these studies, were Native peoples of the USA and Canada (Beuter and Edwards 2004; Bjerregaard and Hansen 2000; Clarkson 1976; Girard et al. 1996; Harnly et al. 1997; McKeown-Eyssen et al. 1983; Mergler et al. 1998; Muckle et al. 2001; Weihe et al. 2002), residents of Hong Kong and China (Choy et al. 2002; Dickman and Leung 1998; Leung et al. 2001), residents of Japan (Fukuda et al. 1999), and American Samoa (Marsh et al. 1974). In fact, a recent random-digit-dial fish consumption survey (with subsequent hair mercury levels in women ages 18-45 from 12 states in the Continental US) found that Asians had methylmercury exposures over the reference dose 83% of the time, compared to 12% for the total survey population (Knobeloch et al. 2005).

Although NHANES was not designed to identify small subgroups at risk, it is imperative that significant populations at risk and important trends be identified. In doing so, this will assist the healthcare clinician in applying scientific literature to the patients they see in their communities where appropriate.

Conclusion:

Study subjects in NHANES who self-identified as Asian, Pacific Islander, Native American or multiracial, had a higher prevalence of elevated blood mercury than all

other racial/ethnic participants in the survey. It is important that both patients and clinicians are aware that members of this group are at increased risk for methylmercury exposure. Future studies should address reasons for the high mercury levels in this group and explore possible interventions for lowering risk of methylmercury exposure in this population.

References:

American Medical Association. Report 13 of the Council on Scientific Affairs (A-04) Mercury and Fish: Consumption: Medical and Public Health Issues 2004. Available: http://www.ama-assn.org/ama/pub/category/13619.html. [accessed 27 February 2005].

Bagenstose LM, Salgame P, Monesteir M. 1999. Murine mercury-induced autoimmunity: A model of chemically related autoimmunity in humans. Immunologic Res 20(1):67-78.

Bernier J, Brousseau P, Krystyniak K, Tryphonas H, Fournier M. 1995. Immunotoxicity of heavy metals in relation to Great Lakes. Environ Health Perspect 103 (suppl 9):23-34.

Beuter A, Edwards R. 2004. Effect of chronic exposure to methylmercury on eye movements in Cree subjects. Int Arch Occup Environ Health 77(2):97-107.

Bigazzi PE. 1994. Autoimmunity and heavy metals. Lupus 3(6):449-453.

Bjerregaard P, Hansen JC. January 2000. Organochlorines and heavy metals in pregnant women from the Disco Bay area in Greenland. Sci Total Environ 245:195-202.

Centers for Disease Control and Prevention (CDC) National Center for Health Statistics. Public use data files. Analytical guidelines. Available: http://www.cdc.gov/nchs/data/nhanes/guidelines1.pdf. or http://www.cdc.gov/nchs/about/major/nhanes/datalink.htm. [accessed 6 May 2005].

Centers for Disease Control and Prevention(CDC). 2004. Blood mercury levels in young children and childbearing-aged women-United States, 1999-2002. Morb Mortal Wkly Rep 53(43):1018-1020.

Choy CM, Lam CW, Cheung LT, Briton-Jones CM, Cheung LP, Haines CJ. 2002. Infertility, blood mercury concentrations and dietary seafood consumption: a case-control study. BJOG 109(10):1121-1125.

Clarkson TW. 1976. Exposure to methylmercury in Grassy Narrows and White Dog Reserves: An interim report. Ottawa Health and Welfare Canada.

Dickman MD, Leung KMC. 1998. Mercury and organochlorine exposure from fish consumption in Hong Kong. Chemosphere 37(5):991-1015.

Dye BA, Schober SE, Dillon CF, Jones RL, Fryar C, McDowell M et al. 2005. Urinary mercury concentrations associated with dental restorations in adult women aged 16-49 years: United States, 1999-2000. Occup Environ Med 62:368-375.

Frustaci A, Magnavita N, Chimenti C, Caldarulo M, Sabbioni E, Pietra R, et al. 1999. Marked elevation of myocardial trace elements in idiopathic dilated cardiomyopathy compared with secondary cardiac dysfunction. J Am Coll Cardiol 33(6):1578-83

Fukuda Y, Ushijima K, Kitano T, Sakamoto M, Futatsuka M. 1999. An analysis of subjective complaints in a population living in a methylmercury-polluted area. Environmental Res Section A 81:100-107.

Girard M, Noel F, Dumont C. 1996. Varying mercury exposure with varying food source in James Bay Cree community. Arctic Med Res 55(2):69-74.

Guallar E, Sanz-Gallardo I, Van't Veer P, Bode P, Aro A, Gomez-Aracena J, et al. 2002. Mercury, fish oils, and the risk of myocardial infarction. N Eng J Med 347(22):1747-54.

Harnly M, Seidel S, Rojas P, Fornes R, Flessel P, Smith D, et al. 1997. Biological monitoring for mercury within a community with soil and fish contamination. Environ Health Perspect 105(4):424-429.

Hightower JM, Moore D. 2003. Mercury Levels in High-End Consumers of fish. Environ Health Perspect 111(4): 604-608.

Knobeloch L, Anderson HA, Imm P, Peters D, Smith A. 2005. Fish consumption, advisory awareness, and hair mercury levels among women of childbearing age. Environmental Res 97(2):219-226.

Leung TY, Choy CM, Yim SF, Lam CW, Haines CJ. 2001. Whole blood mercury concentrations in sub-fertile men in Hong Kong. Aust N Z J Obstet Gynaecol 41(1):75-77.

Mahaffey KR. 2005. Mercury Exposure: Medical and Public Health Issues. Trans Am Clin Climatol Assoc 115.

Mahaffey KR, Clickner RP, Bodurow CC. 2004. Blood organic mercury and dietary mercury intake: National Health and Nutrition Examination Survey, 1999 and 2000. Environ Health Perspect 112 (5): 562-570.

Marsh DO, Turner MD, Crispin Smith J, Wun Choi J, Clarkson TW. Methylmercury (MeHg) in human population eating large quantities of marine fish. II. American Samoa: Cannery workers and fishermen. In “Proc. First International Mercury Conf., May 1974, Barcelona.” Fabrica de Moneda y Timbre, Madrid, Spain. Vol II:235-239.

McKeown-Eyssen GE, Ruedy J, Neims A. 1983. Methylmercury exposure in northern Quebec. II. Neurologic findings in children. Am J Epidemiol 118(4):470-479.

Mergler D, Belanger S, Larribe F, Panisset M, Bowler R, Baldwin M, et al. 1998. Preliminary evidence of neurotoxicity associated with eating fish from the Upper St. Lawrence River Lakes. Neurotoxicology. 19(4-5):691-702.

Muckle G, Ayotte P, Dewailly E, Jacobson S, Jacobson J. 2001. Prenatal Exposure of the Northern Québec Inuit Infants to Environmental Contaminants. Environ Health Perspect 109(12):1291-99.

National Center for Health Statistics. NHANES 1999-2000 and NHANES 2001-2002 Public Use Data Files. Available: http://www.cdc.gov/nchs/about/major/nhanes/NHANES99_00.htm, and http://www.cdc.gov/nchs/about/major/nhanes/nhanes01-02.htm. [accessed 27 February 2005].

Nielsen JB, Hultman P. 2002. Mercury induced autoimmunity in mice. Environ Health Perspect 110(suppl 5):877-881.

Rice DC. 2004. The US EPA reference dose for methylmercury: sources of uncertainty. Environ Res 95:406-413.

Rice DC, Schoeny R, Mahaffey KR. 2003. Methods and rationale for derivation of a reference dose for methylmercury by U.S. EPA. Risk Anal 23:107-115.

Rissanen T, Voutilainen S, Nyyssönen K, Lakka TA, Salonen JT. 2000. Fish oil-derived fatty acids, docosahexaenoic acid and docosapentanoic acid, and the risk of acute coronary events. Circulation 102:2677-2679.

Salonen JT, Seppänen K, Lakka TA, Salonen R, Kaplan GA. 2000. Mercury accumulation and accelerated progression of carotid atherosclerosis: a population-based prospective 4-year follow-up study in men in Eastern Finland. Atherosclerosis 148:265-273.

Salonen JT, Seppänen K, Nyyssönen K, Korpela H, Kauhanen J, Kantola M, et al. 1995. Intake of mercury from fish, lipid peroxidation, and the risk of myocardial infarction and coronary, cardiovascular, and any death in Eastern Finnish men. Circulation 91(3):645-655.

Sechena R, Liao S, Lorenzana R, Nakano C, Polissar N, Fenske R. 2003. Asian American and Pacific Islander seafood consumption-a community-based study in King County, Washington. J Expo Anal Environ Epidemiol 13(4):256-266.

Sheiner EK, Sheiner E, Hammel RD, Potashnik G, Carel R. 2003. Effect of occupational exposures on male fertility: Literature review. Ind Health 41(2):55-62.

Silva IA, Nyland JF, Gorman A, Perisse A, Ventura AM, Santos EC, et al. 2004. Mercury exposure, malaria, and serum antinuclear/antinucleolar antibodies in Amazon populations in Brazil: a cross sectional study. Environ Health 3(1):11.

Sørensen N, Murata K, Budtz-Jørgensen E, Weihe P, Grandjean P. 1999. Prenatal methylmercury exposure as a cardiovascular risk factor at seven years of age. Epidemiology 10: 370-375.

Stejskal J, Stejskal VDM. 1999. The role of metals in autoimmunity and the link to neuroendocrinology. Neuroendocrinol lett 20:351-364.

Stejskal VDM, Danersund A, Lindvall A, Hudecek R, Nordman V, Yaqob A, et al. 1999. Metal-specific lymphocytes: Biomarkers of sensitivity in man. Neuro Endocrinol Lett 20(5):289-298.

Stern AH, Smith AE. 2003. An assessment of the cord blood: maternal blood methylmercury ratio: Implications for risk assessment. Environ Health Perspect 111(12):1465-1470.

US Census Bureau. 2002. The Asian and Pacific Islander Population in the United States. Available: http://www.census.gov/prod/2003pubs/p20-540.pdf). [accessed 14 May 2005].

US Census Bureau. 2002. The American Indian and Alaskan Native Population: 2000. Available: http://www.census.gov/prod/2002pubs/c2kbr01-15.pdf). [accessed 14 May 2005.

Ventura SJ, Hamilton BE Sutton PD. 2003. Revised birth and fertility rates for the United States, 2000 and 2001. National Vital Statistics Reports 51(4). Available: http://www.cdc.gov/nchs/data/nvsr/nvsr51/nvsr51_04.pdf. [accessed 12 January 2005)

Via CS, Nguyen P, Niculescu F, Papadimitriou J, Hoover D, Silbergeld E. 2003. Low dose exposure to inorganic mercury accelerates disease and mortality in acquired murine lupus. Environ Health Perspect 111:1273-1277.

Virtanen JK, Voutilainen S, Rissanen TH, Mursa J, Tuomainen TP, Korhonen MJ, et al. 2005. Mercury, fish oils, and risk of acute coronary events and cardiovascular disease, coronary heart disease, and all-cause mortality in men in Eastern Finland. Arterioscler Thromb Vasc Biol 25(1):228-233.

Weihe P, Hansen JC, Murata K, Debes F, Jorgensen P, Steuerwald U, et al. 2002. Neurobehavioral performance of Inuit children with increased prenatal exposure to methylmercury. Int J Circumpolar Health 61(1):41-49.

Yokoo EM, Valente JG, Grattan L, Schmidt SL, Platt I, Silbergeld EK. 2003. Low level methylmercury exposure affects neuropsychological functioning in adults. Environ Health 2:8.

Table 1. Prevalence of Elevated Blood Mercury Levels among women aged 16-49 participating in NHANES[a] 1999-2002

Race/Ethnicity	N	Percent ≥ 3.5 mcg/L ± SE[b] (95% CI[c])	Percent ≥ 5.8 mcg/L ± SE (95% CI)
Mexican American	1,106	5.71 ± 0.98 (3.70-7.72)	1.70 ± 0.41 (0.87-2.53)
Non-Hispanic White	1,377	11.29 ± 1.91 (7.40-15.19)	5.77 ± 1.24 (3.24-8.30)
Non-Hispanic Black	794	12.47 ± 2.15 (8.08-16.90)	4.82 ± 1.49 (1.78-7.86)
Other Hispanic	220	10.38 ± 3.63 (2.95-17.81)	3.65 ± 1.87 (0.00-7.48)
Other[d] race/ethnicity	140	27.26 ± 4.22 (18.63-35.90)	16.59 ± 0.40 (8.41-24.77)
All Races/ethnicities except “Other”	3,497	10.86 ± 1.45 (7.90-13.83)	5.08 ± 0.90 (3.25-6.92)
All Participants	3,637	11.69 ± 1.42 (8.79-14.60)	5.66 ± 0.94 (3.75-7.58)

[a]NHANES=National Health and Nutrition Examination Survey;

[b]SE=standard error;

[c]CI=confidence interval

[d]Other=refers to participants who self-identified as Asian, Pacific Islander, Native American, multiracial without specifying a main race, or as a race/ethnicity other than Black, non-Hispanic white, Mexican American or Hispanic.

Table 2. Fish/Shellfish Meals and Urine Hg/Creatinine Ratios among women aged 16-49 participating in NHANES[a] 1999-2002

Race/Ethnicity	Mean Number of Fish/Shellfish Meals in the Last 30 Days ± SE[b] (95% CI[c])	Mean Urine Hg/Creatinine Ratios in mcg/g ± SE (95% CI)
Mexican American	2.86 ± 0.15 (2.55-3.17)	1.31 ± 0.12 (1.07-1.55)
Non-Hispanic White	4.63 ± 0.25 (4.13-5.14)	1.07 ± 0.06 (0.95-1.19)
Non-Hispanic Black	4.90 ± 0.27 (4.35-5.45)	1.10 ± 0.12 (0.84-1.34)
Other Hispanic	3.82 ± 0.53 (2.74-4.90)	1.08 ± 0.11 (0.86-1.31)
Other[d]	8.02 ± 1.95 (4.03-12.02)	1.17 ± 0.14 (0.88-1.45)

[a]NHANES=National Health and Nutrition Examination Survey;

[b]SE=standard error;

[c]CI=confidence interval

[d]Other=refers to participants who self-identified as Asian, Pacific Islander, Native American, multiracial without specifying a main race, or as a race/ethnicity other than Black, non-Hispanic white, Mexican American or Hispanic.